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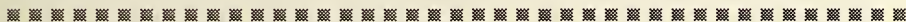


# THE BEAN BAG

A newsletter to promote communication among research scientists  
concerned with the systematics of the Leguminosae/Fabaceae

Number 30

November 1989



## Important Message to all Bean Bag Readers

The enclosed pink *Gleanings sheet* that bears your name, address, and specialities **must** be returned by you to the Bean Bag, address given below, before April 1, 1990, if you want to continue to receive the Bean Bag. Those who do not return the pink sheet will be dropped as a Bean Bag Reader.

As a future improvement of the **Directory** we plan to include voice telephone numbers, FAX telephone numbers, and electronic mail addresses in the November 1990 **Directory**. Please enter these data in the spaces provided on your *Gleanings sheet*.

Bean Bag address: SB&ML, Bldg. 265, BARC-East  
Beltsville, MD 20705 USA

## From the Editors

Charles R. Gunn and Joseph H. Kirkbride, Jr.

The BB is designed to promote communication among research scientists concerned with legume systematics. To achieve this goal the BB is issued in May and November of each year and features six columns: From the Editors, News (meetings, major events, announcements, etc.), New Readers, Gleanings, Nodulation and Nitrogen Fixation (new nodulation records), and Recent Legume Literature. Data in the Gleanings column are derived from questionnaire sheets which Readers complete and return. If you have news about legume systematics, send it to us for this column. The Recent Legume Literature column contains published research papers of specific interest to BB Readers. Recent is defined as one year old. We rarely will publish a citation that is more than one year old. Specific interest to BB Readers is defined as research papers of interest to a world wide group of legume systematic botanists. We encourage Bean Bag (BB) Readers to send us notices, observations, etc.

Diacritical marks can now be placed in the BB. If such marks should be placed in your name, address, publications, etc., please let us know. We are especially interested in correcting our Directory. Thank you.

## Third International Legume Conference

Roger M. Polhill

We hope that Readers will find it convenient if we hold the next meeting at Kew in the second week of July 1992 with special group meetings continuing into the next week. Please let me know if that clashes with any other major international meeting.

The Coordinating Committee is trying to develop a balanced, broad-based, exciting programme. As suggested in the previous notice we have invited several leading authorities to act as Coordinators for the several sessions. The list is not quite complete, so provisionally we anticipate the following programme:

**Phylogeny.** Coordinator: Dr. M. D. Crisp, Australian National Botanic Gardens, Box 177, Canberra, ACT 2601, Australia, Fax: (862) 480632. One day provisionally allocated to higher-level legume phylogeny. Extent of individual tribal reviews still is to be considered, but some emphasis sought on basal groups, e.g., Sophoreae and Casalpinieae.

**Molecular Biology.** Coordinator: Dr. J. J. Doyle, L. H. Bailey Hortorium, 467 Mann Library Building, Cornell University, Ithaca, New York, 14853-0271, USA. Half-day provisionally allocated.

**Structural Botany.** Coordinator: Dr. I. K. Ferguson, Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, Great Britain, Fax: 01 948 1197, and Professor Shirley C. Tucker, Department of Botany, Louisiana State University, Baton Rouge, Louisiana, 70803, USA. One day provisionally allocated. Suggested topics include: fossils; palynology; vegetative, legume, and seed morphology; and floral development.

**Reproductive Biology.** Coordinator: Professor Beryl B. Simpson, Department of Botany, University of Texas, Austin, Texas, 78713-7640, USA. Half-day provisionally allocated.

**Biogeography.** Coordinator: Professor C. H. Stirtis, Department of Botany, University of Natal, Box 375, Pietermaritzburg 3200, South Africa, Fax: (0331) 63496. Half-day provisionally allocated.

Other sessions are scheduled for plant-animal interactions, rhizobia and mycorrhizae, phytochemistry, genetic characteristics of phenological responses, and some applied aspects. I am grateful for some suggestions which have been circulated to the Coordinating Committee, formed from the Coordinators and a few other senior colleagues. It is not anticipated to deal in detail with ethnobotany, under-exploited legumes, and crop plants which deserve a separate forum, or with finer detail of taxonomic revisionary work.

If you would like to assist in developing this programme please write to the appropriate coordinators and to Dr. Roger M. Polhill, Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, Great Britain, voice telephone: 441-940-1171, Fax: 01 948 1197.

## Eleventh TRIFOLIUM Conference

The *Trifolium* Conference is held every two years to provide a forum at which clover and special purpose legume researchers can exchange information and discuss common problems and goals. The Eleventh *Trifolium* Conference will be held at the Silver Falls Conference Center, Sublimity, Oregon, USA, 9 - 11 July 1990. The Conference will include an overview of forage legume research in Oregon, voluntary paper and poster sessions, a work session on legume seed production, and a tour of seed research and production in the Willamette valley.

For additional information contact Dr. Jeffrey J. Steiner, USDA-ARS, National Forage Seed Production Center, Oregon State University, Corvallis, Oregon 97330, USA (503-757-4375) or Dr. Paul R. Beuselinck, USDA-ARS, Plant Genetics Unit, University of Missouri, 207 Waters Hall, Columbia, Missouri 65211, USA (314-882-6406).

## Nodulation and Nitrogen Fixation

Legume Nodulation Reports not in Allen and Allen (1981)

Taxon	Status <sup>1</sup>	Nodule <sup>2</sup> Shape	Status <sup>3</sup>
<i>Lotus arenarius</i> Brot.	+		3
<i>Lotus collinus</i> (Boiss.) Heldr.	+		3
<i>Lotus palustris</i> Willd.	+		3
<i>Lotus subbiflorus</i> Lag. subsp. <i>subbiflorus</i>	+		3
<i>Oxytropis arctobia</i> Bunge	+		4
<i>Prosopis pubescens</i>	±		1
<i>Xanthocercis zambeziaca</i>	±		1
<i>Vigna micrantha</i>	+		2

<sup>1</sup>Status: +, root nodules reported as present; -, root nodules reported as absent; ±, the nodulation report conflicts with Allen and Allen (1981).

<sup>2</sup>Nodule shape: Ae, aeschynomeneoid; As, astragaloid (now referred to as caesalpinoid by Corby); Cr, crotalaroid; CrB, branched crotalaroid; CrS, simple crotalaroid; De, desmodioid; Gl, globose; Lu, lupinoid; Mu, mucunoid.

<sup>3</sup>Sources:

1. CORBY.
2. Ibia, T. O. and N. N. Agbim. 1988. Nodulation and nitrogen fixation in three wild legumes of the derived savannah of Nigeria. *Beitrage trop. Landwirtschaft. Veterinarmed.* 26: 255-262.
3. KIRKBRIDE and BEUSELINCK, field observations in Morocco, 1989.
4. Schulman, H. M., M. C. Lewis, E. M. Tipping, and L. M. Bordeleau. 1988. Nitrogen fixation by three species of Leguminosae in the Canadian high Arctic tundra. *Plant, Cell and Environment* 11: 721-728.

## HARVARD PAPERS IN BOTANY

### A New Journal

The Harvard University Herbaria have announced the termination of three journals, *Contributions from the Gray Herbarium*, *Occasional Papers of the Farlow Herbarium*, and *Leaflets of the Botanical Museum*, and the creation of a new publication, *Harvard Papers in Botany* (ISSN: 1043-4534). Number 1 appeared in May 1989, and has three articles: *Introduction and summary of*

publications in botany published by the Botanical Museum, Bussey Institution, Farlow Herbarium and Gray Herbarium by D. H. Pfister; *Harvard-by-the-Cuchara: A century of associations* by A. H. Dupree; and *Systematics and Phylogeny of Schizopetalon (Brassicaceae)* by I. A. Al-Shehbaz. It will be published biannually and cover the areas contained in the previous three journals. If you or your institution have received any of the three terminated journals, please notify the following person as to whether you want to receive the new journal or not: C. S. Hesterberg, Publications Office, Harvard University Herbaria, 22 Divinity Avenue, Cambridge, Massachusetts 02138, USA.

## First Kew International Compositae Conference

This major international conference on the biology, chemistry, systematics and utilization of the *Compositae* will be held at the Royal Botanic Gardens, Kew, on 24 July - 5 August 1994.

The conference aims to stimulate research on *Compositae* and provide a means for its presentation, to produce a volume of proceedings supplementing and updating the 1975 Reading Symposium volume (Heywood, Harborne, and Turner, *The Biology and Chemistry of the Compositae*, Academic Press, 1977), and to promote the production of a *Genera Compositarum* as an international project.

For additional information write to the Compositae Conference, Royal Botanic Gardens, Richmond, Surrey, TW9 3AB, Great Britain.

## Gleanings

AGUILAR has started three Philippines legume projects: 1) Checklist; 2) historical study of nodules; and 3) seed morphology. Needs temperate legume seeds and herbarium specimens and offers same from the Philippines.

AGULLO is working on *Prosopis* of Argentina.

ARAMBARRI continues her study on vascular bundles in *Lotus* seeds. Needs seed samples of *Lotus* (*Hosachia*, *Syrmatium*) and offers fruits and seeds of *Acacia melanoxylon*, *Genitsa tinctoria*, and *Sesbania punicea* and seeds of *Lotus* spp.

BARRETO, see YAKOVLEV.

BAUDOIN is looking for seeds of traditional lima beans (*Phaseolus lunatus*) from south-east Asia (particularly Burma) and from Mauritius.

BEUSELINCK, see KIRKBRIDE.

BOOTH, see DELGADO SALINAS.

BRUNEAU, see DELGADO SALINAS and DOYLE.

CORBY still needs seeds of *Mora megistosperma*.

CZAKO needs seeds of *Baphia nitida*, *Dalbergia nitidula*, *D. odorifera*, *Haemtoxylon africanum*, *H. campeachianum*, *Peltogyne* spp., *Pterocarpus santalinus*, and *P. soyauxii*.

DELGADO SALINAS with DOYLE, BRUNEAU, and Dan Potter, is studying the systematics of Phaseolinae including molecular and morphological characteristics and with BOOTH (new reader), is also studying the systematics of New World *Vigna* and *Ramirezella* species. Needs seeds of *Vigna*,



*Dolichopsis*, and *Dolichos*. See also DOYLE.

DOYLE has several DNA papers in press and is working on these projects:

1. Molecular phylogenetic studies of the tribe Phaseoleae:
    - a. 78 kb cpDNA inversion (with BRUNEAU and J. D. Palmer) [paper submitted];
    - b. Restriction mapping of members of subtribe Glycininae (a generic level study involving: *Amphicarpa*, *Cologania*, *Dumasia*, *Glycine*, *Neonotonia*, *Nogra*, *Pseudeminia*, *Pseudovigna*, *Pueraria*, *Shuteria*, *Teramnus*, *Teyleria*, and outgroups *Dioclea*, *Hardenbergia*, and *Ophrestia*) (with J. L. Doyle);
    - c. Molecular evolutionary and systematic studies of *Erythrina* and *Erythrinae* (with BRUNEAU);
    - d. Molecular evolutionary systematics studies of *Sphenostylis* (with D. Potter);
    - e. Chloroplast DNA phylogeny of *Phaseolus*, *Ramirezella*, (mostly) New World *Vigna*, including outgroups *Dipogon*, *Lablab*, *Macroptilium*, *Macrotyloma*, *Oxyrhynchus*, and *Strophostyles* (with DELGADO SALINAS).
  2. Continued molecular systematic studies in *Glycine* subgenus *Glycine* (with A. H. D. Brown and J. L. Doyle).
  3. Molecular evolution of glucosephosphate isomerase genes in legumes (with N. Weeden and D. Gavin).
  4. Chloroplast DNA phylogenetic studies in Mimosoideae tribe Mimoseae (with LUCKOW).
  5. Molecular systematics of Robinieae and Millettieae (with LAVIN).
- Needs seeds, plants, fresh leaves, or recent (untreated) herbarium specimens of numerous genera of Phaseoleae: *Alistilus*, *Austrodolichos*, *Baukea*, *Camptosema*, *Carrissoa*, *Chrysoscias*, *Clitoriopsis*, *Cochlianthus*, *Collaea*, *Cratylia*, *Cruddasia*, *Cymbosema*, *Decorsea*, *Diphyllarium*, *Dolichopsis*, *Dolichos* (non *Macrotyloma*!), *Dunbaria*, *Dysolobium*, *Endomallus*, *Eminia*, *Herpyza*, *Luzonia*, *Macropsychnanthus*, *Mastertia*, *Neorautanenia*, *Neorudolphia*, *Nesphostylis*, *Otoptera*, *Paracalyx*, *Periandra*, *Physostigma*, *Pseudoeriosema*, *Rhodopis*, *Sinodolichos*, *Spathionema*, *Spatholobus*, and *Vatovaea*, and offers any genera of Phaseoleae not listed above as either seed, living plants, or DNA samples (sometimes all three). In addition, DOYLE and LAVIN have accumulated a general legume collection (again as seed, plants, or DNA) fairly representative of Papilionoideae. See also DELGADO SALINAS.

FORTUNATO needs material of *Erisoema* and *Rhynchosia* from South America, *Galactia* from Paraguay, Bolivia, Uruguay, Brazil, and Peru, and *Mimosa* from Paraguay, Bolivia, and Uruguay, and offers legumes from Argentina and Paraguay.

FORTUNE-HOPKINS is working on the pollination biology of *Mucuna* spp. of Papua New Guinea.

FRANCISCO-ORTEGA (new Reader) is working with the genetic resources of *Chamaecytisus proliferus* var. *palmensis* (tagasaste) in the Canary Islands. Needs information about cultivation of tagasaste outside the Canary Islands and offers information about the complex in the Canary Islands.

Genise, J., PALACIOS, and HOC have completed a study on the floral biology of 3 *Prosopis* spp., and the manuscript has been submitted to *Darwiniana* for publication.

GRAVES (new Reader), see KIRKBRIDE.

GUNN, RITCHIE, WIERSEMA, and KIRKBRIDE are listing ca. 13,700 generic names of phanerogams according to recognized families. See also LERSTEN and WIERSEMA.

HERNANDEZ has published on the systematics of *Zapoteca* in the *Annals of the Missouri Botanical Garden*.

HOC completed her study of *Albizia*, *Pithecellobium*, *Inga*, and *Cathormion* for *Flora del Paraguay*, and the editorial committee is now reviewing the manuscript. HOC and PALACIOS are working on *Platymenia* and *Samanea* for *Flora del Paraguay* and on *Vigna* for Argentina and *Flora del Paraguay*. See also J. Genise.

HUSAINI is surveying the cytology of Faboideae species from Los Plateau of Nigeria. Needs publications on legume cytology and taxonomy and offers seeds of *Abrus precatorius*, *Canavalia ensiformis*, *Erythrina vogelii*, and *Mucuna* spp.

IZAGUIRRE-ARTUCIO (new Reader) is studying the taxonomy, ecology, and forage potential of native legumes of Uruguay and environs. Needs literature on methods of reproductive behavior and offers seeds.

KELMAN (new Reader) is investigating the adaptation of *Lotus* and *Astragalus* to pastures in south-eastern Australia. Needs *Lotus* and *Astragalus* species with tolerance to acid or saline soils and offers seeds of native endemic and naturalized *Lotus* spp.

KIRKBRIDE, BEUSELINCK, and GRAVES (new Reader) were in Morocco from May 29 to July 7, 1989, to collect germplasm of forage legumes and *Festuca*. 7,795 km. were traveled by road, and 76 accessions of *Lotus*, 36 accessions of *Medicago*, 9 of *Trifolium subterraneum* L., and 14 of other native legumes were collected. Nodules were also collected, and recorded from four species of *Lotus* for the first time, see *Nodulation and Nitrogen Fixation* column. See also GUNN and WIERSEMA.

LAVIN, see DOYLE.

LERSTEN, GUNN, and Brewbaker have completed a study of the legume seed lens, especially in Caesalpinioideae and Mimosoideae.

LEWIS continues with his dissertation on Neotropical *Caesalpinia* spp., needs material and data, and offers to name Neotropical legumes, especially Caesalpinioideae and Papilionoideae, and seeds of Central American *Caesalpinia* spp.

LUCKOW is studying the generic relationships of genera in Mimosaeae. Needs seeds of any mimosoid genera, including *Amblygonocarpus*, *Anadenanthera*, *Dinizia*, *Monoschismia*, *Piptadenastrum*, and *Schleinitzia*, and offers seeds of *Desmanthus* and *Neptunia*. See also DOYLE.

MA (new Reader) is studying systems and evolution at the suprageneric level and pollen morphology of Chinese legumes. Needs specimens and seeds of east Asia, especially Chinese, legumes and offers same from China. Also has a graduate student's thesis abstract (2: 3-6) dated 1985 on *Lespedeza* spp. of northeast China.

MARMILLON is working on legume-tree gums, needs gum samples, and offers *Prosopis* seeds.

MOSS is currently collecting seed and herbarium specimens of forage legumes and their relatives throughout southern and central Africa. Will supply seed, and if requests are received in time, will collect particular taxa. She is an IBPGR collector.

OKOLO is conducting experiments on in vitro pollen germination of legume crops. Needs seeds of tropical legume crops and offers legume seeds.

OLIVEIRA is beginning a study of *Lupinus* from the state of Rio Grande do Sul, Brazil, and offers Leguminosae from the same area.

ORTEGA (new Reader) is breeding *Medicago sativa* and *Trifolium pratense* and assembling collections of *Lotus tenuis* and *L. uliginosa*. Needs germplasm of *Medicago sativa* (adapted to acid soils) and *Trifolium pratense* (resistant to *Hylastinus obscurus*) and literature on breeding of the same and on the taxonomy of *Lotus*, and offers germplasm of *Lotus*, *Medicago sativa*, and *Trifolium pratense*.

PALACIOS, see J. Genise and HOC.

PENNINGTON (new Reader) has been awarded a Research Fellowship at Kew for 5 years and plans to revise *Inga*.

PITARGUE (new Reader) is studying palynology of *Bauhinia*, *Crotalaria*, *Desmodium*, and *Indigofera*.

SOSA is doing *Inga* for *Flora Meosamerica* and needs seeds of *Lonchocarpus*.

SPJUT is working on the phytogeography of *Cynometra* and related genera. Would like to receive reprints or unpublished information, such as collection-site lists of taxa documented by herbarium specimens, pertaining to synecological aspects of spp. of *Cynometra* and related genera in vegetation types other than mangrove communities. Needs are strongest in Malaya, Madagascar, and South America.

SUSO is cross pollinating *Vicia faba*, needs relatives of *Vicia faba* and *Cicer arietinum*, and offers Spanish seeds of same.

TURNER, with Brook Milligan, is studying the DNA restriction sites of *Baptisia* and *Thermopsis*.

WIERSEMA, KIRKBRIDE, and GUNN have submitted for publication a nomenclator of the legume names in the Germplasm Resources Information Network (GRIN), U.S. Department of Agriculture, including 3,982 accepted scientific names and 3,286 synonyms. It will be sent to all BB readers. See also GUNN.

YAKOVLEV was in Cuba for a scientific trip of one month, and he is starting a new project on the legumes of the Caucasus. He and BARRETO are preparing 3 articles on *Cassia*, s.l.

## RECENT LEGUME LITERATURE

Eds. Note: Author names in all capital letters are BB Readers. Their full names and addresses are listed in the November 1989 BB Directory. Correspondence about their articles should be sent directly to them.

ARAMBARRI. 1988. Vascular bundles in genus *Lotus* L. subgenus *Deflectostylus* Callen seeds (Fabaceae: Faboideae). *Lotus Newsletter* 19: 27-30.

Aridius 1(2): 1-8. 1989. Main article is an introduction to the sponsoring organization.

BARNEBY. 1989. *Obolonga*, a new genus of Mimosaceae tribe Ingeae from Hispaniola. *Brittonia* 41(2): 167-172.

BAUDOIN. 1989. *Phaseolus lunatus* L. In: VAN DER MAESEN and Sdaikin Somaatmadja, eds., Plant Resources of South-East Asia N°1: Pulses, pages 57-60. Pudoc, Wageningen.

BAUDOIN. 1989. L'amélioration de *Phaseolus lunatus* L. en zones tropicales. 2. Ecologie et physiologie. *Bull. Rech. Agron. Gembloux* 24(1): 5-32.

- BAUDOIN and MARCHAL. 1989. Taxonomy and evolution of the genus *Vigna*. In: S. Shanmugasundaran, ed., Mungbean. Proceedings of the Second International Symposium, Bangkok, Thailand, 16-20 November 1987, pages 1-12. Asian Vegetale Research and Development Center, Tainan, Taiwan.
- CUBERO. 1987. Chickpea. In: M. Saxera and K. B. Singh, eds., C.A.B. International, pages 35-66. Morphology section contributed by SUSO.
- Dalhgren, R. 1988. Fabaceae, Papilionoideae, Crotalariaeae (*Aspalathus*). In: O. A. Leistner, ed., Flora of southern Africa, which deals with the territories of South Africa, Ciskei, Transkei, Lesotho, Bophuthatswana, South West Africa/Namibia, Botswana, and Venda, vol. 16, pt. 3, fasc. 6. xii, 430 pages, illus. R 83.95 from Botanical Research Institute, Private Bag X101, 0001 Pretoria, South Africa.
- DOYLE. 1988. 5S ribosomal gene variation in the soybean and its progenitor. Theoretical and Applied Genetics 75: 621-624.
- DOYLE and A. H. D. Brown. 1989. 5S ribosomal gene variation in the *Glycine tomentella* polyploid complex. Systematic Botany 14: 398-407.
- Faria, S. M. de, LEWIS, SPRENT, and J. M. Sutherland. 1989. Occurrence of nodulation in the Leguminosae. New Phytologist 111: 607-619.
- Feverieiro, V. P. B. 1986-1987. *Macropitium* (Benth) Urban of Brazil (Leguminosae, Faboideae, Phaseoleae, Phaseolinae). Arq. Jard. Bot. Rio de Janeiro 27: 109-180.
- FORTUNATO. 1989. Contribución al género *Mimosa* (Mimosaceae). Ann. Missouri Bot. Garden 76: 381-385.
- FORTUNATO and S. Tressens. 1989. Una nueva especie diplostémona del género *Mimosa* (Leguminosae, Mimosaeae) para Argentina y Paraguay. Candollea 44(1): 35-38.
- GEESINK and D. J. Kornet. 1989. Speciation and Malesian Leguminosae. In: L. B. Holm-Nielsen, I. C. Nielsen, and H. Balsley, eds., Tropical Forests: Botanical Dynamics, Speciation and Diversity, pages 135-151. Academic Press, London.
- GUINET. 1989. Pollen of *Obolinga zanonii* (Mimosaceae). Brittonia 41(2): 173-174.
- HOC. 1989. *Calliandra* (Leguminosae, Mimosoideae) en Argentina. Darwiniana, in press. 53 pages, 7 figs.
- HOC. 1989. *Inga* (leguminosae, Mimosoideae) en Argentina. Darwiniana, in press. 47 pages, 5 figs.
- HOC. 1989. *Calliandra* (Leguminosae, Mimosoideae) en Argentina. Estudio del polen. Bol. Soc. Argent. Bot., in press. 22 pages, 4 figs.
- Hwang, P. H. and MA. 1987. Studies on pollen morphology and taxonomy of *Lespedeza* and its allied genera from NE China. Acta Phytotaxonomia Sinica 25(5): 366-370.
- Keim, P., R. C. S. Shoemaker, and PALMER. 1989. Restriction fragment length polymorphism in soybean. Theor. Appl. Genet. 77: 786-792.
- Knox, R. B., J. Kenrick, S. Jobson, and C. Dumas. 1989. Reproductive function in the Mimosoid legume *Acacia retinodes*, ultrastructural and cytochemical characteristics of stigma receptivity. Australian Jour. Bot. 37(2): 103-124.
- Kumar, P. S. and HYMOWITZ. 1989. Where are the diploid 2N equals 2X equals 20 genome donors of *Glycine* Willd. (Leguminosae, Papilionoideae). Euphytica 40(3): 221-226.
- Lankhorst, R. M. K., P. Katinakis, A. van Kammen, and R. C. van den Bos. 1988. Identification and characterization of a bacteroid-specific dehydrogenase complex in *Rhizobium leguminosarum* Pre. Applied and Environmental Microbiology 54(12): 3008-3013.
- LEWIS. 1988. Four little-known species of Leguminosae from Cuba. Willdenowia 18: 223-229.
- LEWIS. 1988. A new species of *Inga* (Leg.-Mim.) from Ecuador. Kew Bull. 43(4): 707-709.
- LEWIS. 1989. A new species of *Acacia* (Leg.-Mim.) from Brazil. Kew Bull. 44(1): 171-173.
- LEWIS. 1989. A new species of *Poecilanthus* (Leg.-Pap.) from Brazil. Kew Bull. 44(1): 167-169.
- LEWIS. 1989. Leguminosae. In: Grey-Wilson, ed., A manual of Alpine and Rock Garden Plants.

Available from from the Kew Shop, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AE, Great Britain.



- LEWIS and P. E. Owen. 1989. Legumes of the Ilha de Maracá. Royal Botanic Gardens, Kew. xvi + 95 pages, 7 black and white and 8 colored plates, 2 maps. £7.50 from the Kew Shop, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AE, Great Britain; if payment not made in sterling, add £5.00 for bank surcharge.
- LIMA. 1988 dated 1983-1985 on cover. *Centrolobium Martius* ex Benth (Leguminosae: Papilionoideae): Estudo taxonomico das espécies brasileiras extra-Amazonicas. Arq. Jard. Bot. Rio de Janeiro 27: 177-191.
- MAASSOUMI. 1988 ?1989. Notes on the genus *Astragalus* L. (Leguminosae) in Iran III. New records and new species. Iran. Jour. Bot. 4: 127-142.
- MAASSOUMI, A. Ghahreman, and V. Mozaffarian. 1988 ?1989. A new species of the genus *Astragalus*, sect. *Tricholobus* (Leguminosae) from Iran. Iran. Jour. Bot. 4: 109-110.
- MAASSOUMI and PODLECH. 1987. Some new species and subspecies of *Astragalus* L. section *Caprini* DC. (Leguminosae) from Iran. Bot. Jahrb. Syst. Pflanzengesch. Pflanzengeogr. 109(2): 261-278.
- MAASSOUMI and PODLECH. 1988 ?1989. Eleven new species and a new section from the genus *Astragalus* (Leguminosae) in Iran. Iran. Jour. Bot. 4: 71-90.
- Miller, R. B. 1989. Wood anatomy of *Ogolinga* (Mimosaceae). Brittonia 41(2): 178-182.
- Mueller, R. and WEDER. 1989. Isolation and characterization of two trypsin-chymotrypsin inhibitors from lentil seeds (*Lens culinaris* Medik.). Jour. Food Biochem. 13: 39-63.
- NEILL and E. M. Occhioni. 1989. A new species of *Stryphnodendron* (Fabaceae: Mimosoideae) from Amazonian Ecuador. Ann. Missouri Bot. Gard. 76: 357-359.
- Owens, S. J. and LEWIS. 1989. Taxonomic and functional implications of stigma morphology in species of *Cassia*, *Chamaecrista*, and *Senna* (Leg.-Caesalp.). Plant Systematics and Evolution 163: 93-105.
- PASQUET and MARECHAL. 1989. *Vigna benueensis*, une nouvelle espèce de la section *Vigna* du genre *Vigna* (Fabaceae). Can. Jour. Bot. 67: 949-953.
- Perrino, P., G. Maruca, R. N. Lester, and HANELT. 1988. A chromatographic approach to the taxonomy of *Vicia* L. Kulturplanze 36: 391-404.
- PODLECH. 1988. Revision von *Astragalus* L. sect. *Caprini* DC. (Leguminosae). Mitt. Bot. Staatss. München 25: 1-924.
- PODLECH. 1988. Beiträge zur Kenntnis der Gattung *Astragalus* L. (Leguminosae) III. Einige neue Arten aus dem Iran, aus Afghanistan und Turkestan. Mitt. Bot. Staatss. München 27: 51-64.
- Pydyura, A. I. 1988. A brief summary of the basic systematics of the genus *Medicago* L. (Fabaceae). Problemy obshchei Mole. Biol. Number 7 op.: 20-23. In Russian.
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